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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/802,130	BALA ET AL.	
	Examiner	Art Unit	
	David P. Rashid	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 November 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-22 and 24-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *5-7 and 14-16* is/are allowed.

6)☒ Claim(s) *1, 3-4, 8-13, and 17-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 November 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

All of the examiner's suggestions presented herein below have been assumed for examination purposes, unless otherwise noted.

Amendments

1. This office action is responsive to the claim and specification amendment received on 11/21/2007. **Claims 1, 3-22,** and **24-28** remain pending; **claims 2** and **23** cancelled.

Drawings

2. The replacement drawings were received on 11/21/2007 and are acceptable. In response to applicant's drawing amendments and remarks, the previous drawing objections are withdrawn.

Specification

3. In response to applicant's specification amendments and remarks, the previous specification suggestions are withdrawn.

Claim Objections

4. The following is a quotation of 37 CFR 1.75(d)(1):

> The claim or claims must conform to the invention as set forth in the remainder of the specification and the terms and phrases used in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

5. **Claim 28** is objected to under 37 CFR 1.75(d)(1) as failing to conform to the invention as set forth in the remainder of the specification.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. **Claims 11-13** and **19** are rejected under 35 U.S.C. 102(b) as being anticipated by Weston (US 5,434,627 A).

Regarding **claim 11**, Weston discloses a system for converting a color image to a grayscale image ("The invention aims to reduce or eliminate this residual cross talk between luminance and chrominance signals.", col. 1, l. 33.), comprising:

an image input device that receives a color image having luminance and chrominance components (fig. 7(a) of Weston discloses the W-PAL assembler input device receiving luminance and chrominance components);

an edge detector operably connected to the image input device, the edge detector including a high pass filter for computing high-pass filtered chrominance components from the received chrominance components ("The input to the l. delay 144 is the luminances signal filtered by high pass filter F, 150 and added in adder 152 to the chrominance signal filtered by high pass filter F, 154. Thus the filter F must be repeated for the Y and C signals.", col. 5, l. 35. Chrominance is a signal used in many video systems to carry the color information of the picture separately from the accompanying luminance signal, and thus fig. 7(a) discloses a color image input. The edge detector in this case is the high pass filter itself.);

a feedback unit operably connected to the edge detector, wherein the feedback unit modifies the luminance component based upon the high-pass filtered chrominance components (Fig. 7(a)

discloses delay unit 144 which inputs a luminance component based upon the high-pass filtered chrominance components when added at adder 152); and

an output device operably connected to the feedback unit, wherein the output device receives the modified luminance component and outputs a grayscale image based upon the modified luminance component (Refer to claim 2, in addition to the possibility of the color image consisting of colors making it strictly a grayscale image. Color is a broader scope than shades of gray.).

Regarding **claim 12**, Weston discloses the system of claim 11, wherein the edge detector combines multiple high-pass filtered chrominance, components into a single high-pass filtered chrominance component (refer to reference cited in claim 3).

Regarding **claim 13**, Weston discloses the system of claim 12, further comprising a processing unit operably connected to and between the edge detector and the feedback unit (fig. 7A discloses an adder reference numeral 152 for processing the combination between the high pass filtered chrominance and luminance signals, and hence can be called a "processing unit". The adder is in between the high pass filter (edge detector) and the delay unit 144 (feedback unit).);

wherein the edge detector is also used to compute a high pass filtered luminance component from the received luminance component (fig. 7A discloses a high pass filter for both the chrominance and luminance signals (reference numerals 150 and 154). These two high pass filters may be the same high pass filter as must be assumed for examination purposes.); and

wherein the processing unit weights the high-pass-filtered combined chrominance component based upon the high pass filtered luminance component (As in the reference given in claim 1 in combination with fig. 7(a), adder 152 adds the high-passed chrominance filter to the high-passed

luminance signal based upon the presence/existence of the high pass filtered luminance component. The weighting factor has assumed to be "1" for examination purposes.).

Regarding **claim 19**, Weston discloses the method of claim 11, wherein the output device is a display screen (fig. 7(a) discloses a PAL output, as well as fig. 7(b) disclosing the PAL channel transforming back into luminance and chrominance. It is well known to one of ordinary skill in the art that the PAL (phase-alternating l.) is a color encoding system used in broadcast television systems, and is used exclusively for outputting an image on a television – hence a display screen.).

8. **Claims 10** and **28** are rejected under 35 U.S.C. 102(b) as being anticipated by Hamilton, Jr. et al. (US 6,259,822 B1).

Claim 10 is a product-by-process claim. As cited in MPEP 2113 PRODUCT-BY-PRODUCT CLAIMS, "[e]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding **claim 10**, Hamilton discloses an edge-enhanced grayscale image ("black and white" in col. 3, l. 12; fig. 8)

Regarding **claim 28**, Hamilton discloses a method for enhancing edges ("Conventional sharpening methods, such as unsharp masking, achieve the appearance of edge sharpening by locally lightening the lighter portion of an edge region and locally darkening the darker portion of an edge region. The resulting increase in contrast provides the sharpening effect. Such methods can be applied to black and white digital images as well as to colored digital images.", col. 1, l. 23) between a first

object (fig. 8, the area to the left of element T) and a second object (fig. 8, the area to the right of element T) in a grayscale image created from a color image ("For colored images, the pixels of the edge boost record are added or summed to the pixels of each of the red, green, and blue color records of the acquired image. If the acquired image is black and white, the usual method of combination is just the pixel by pixel addition of the acquired image and the edge boost record.", col. 3, ll. 8-14), comprising darkening the first object near an edge between the two objects and lightening the second object near the edge between the two objects as a function of the original color edge strength (fig. 8).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. **Claims 1-4** and **9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Weston (US 5,434,627 A) in view of Herrmann (US 2003/0197674 A1).

Regarding **claim 1**, while Weston discloses a method (fig. 7a), comprising:

high pass filtering (fig. 7a, element 154) at least one chrominance component ("C" in fig. 7a) of a color image (It is well known to one of ordinary skill in the art that chrominance is a signal used in many video systems to carry the color information of the picture separately from the accompanying luminance signal, and thus fig. 7(a) discloses a color image input. It must be noted that a grayscale image may also be considered a color image, in that the shades of gray are distinct colors.) to compute at least one high pass filtered chrominance component;

modifying (fig. 7a, elements 146, 152) a luminance component ("Y" in fig. 7a) of the color image based upon the at least one high pass filtered chrominance component; and

generating an output image (fig. 7b, element Y_O) based upon the modified luminance component, Weston does not disclose wherein the output image is a monochrome output image.

Herrmann discloses a color/mono switched display that teaches converting a luminance signal into a monochrome signal/image (paras. 0005-0007).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for output luminance component of Weston (fig. 7b, element Y_O) to include a monochrome output image as taught by Herrmann ("monochrome mode" in para. 0005) as " a need exists for a method and apparatus to circumvent this "color breakup" phenomenon in a simple and efficient manner.", Herrmann, para. 0006.

Regarding **claim 3,** Weston further comprises combining multiple high pass filtered chrominance components into a single chrominance component before adjusting the luminance component ("Similarly the combination of the two chrominance signals into a single signal (C=U+V/U-V) which is a feature of W-PAL creates cross-talk between the two chrominance signals (which is reduced by the pre & post filters).", col. 2, l. 19. Chrominance signals U and V are high passed as shown in fig. 7(a) (element 154) before adjusting the luminance component.).

Regarding **claim 4**, Weston further comprises:

applying a high pass filter to a luminance component of the color image to compute a high pass filtered luminance component (as in the reference given in claim 1 in combination with fig. 7(a), the luminance is split from which one channel is passed through high pass filter 150); and

weighting the at least one high pass filtered chrominance component by a weighting factor based upon the high pass filtered luminance component (as in the reference given in claim 1 in combination with fig. 7(a), adder 152 adds the high-passed chrominance filter to the high-passed luminance signal based upon the presence/existence of the high pass filtered luminance component; the weighting factor has assumed to be the unit "1" for examination purposes).

Regarding **claim 9**, Weston further comprises weighting the at least one high-pass-filtered chrominance component by a weighting factor based upon a magnitude of the high pass filtered chrominance component (as in the reference given in claim 1 in combination with fig. 7(a), adder 152 adds the high-passed chrominance filter to the high-passed luminance signal based upon the presence/existence of the high pass filtered luminance component; the weighting factor has assumed to be the unit "1" for examination purposes based on the magnitude of the high pass filtered chrominance component existing).

11. **Claims 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Weston (US 5,434,627 A) in view of Herrmann (US 2003/0197674 A1) and Daly et al. (US 5,987,169 A).

Regarding **claim 8**, while Weston in view of Herrmann discloses the method of claim 1 further comprising converting information from the color image to a luminance-chrominance representation (refer to references/arguments cited in claim 1), Weston does not teach the color image from an RGB representation.

Daly et al. teaches a luminance/chrominance apparatus ("This disclosure deals with using the luminance signal as a control for the processing of chrominance signals in order to prevent chromatic blur", col. 2, l. 63) wherein the input color image is from an RGB representation (fig. 5 discloses the

input image as an RGB representation before being converted luminance-chrominance representation.).

It would have been obvious at the time the invention was made to one of ordinary skill in the art for the method of Weston to represent an input color image as RGB as taught by Daly et al., to represent the color image by a standard digital image format.

12. **Claims 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Weston (US 5,434,627 A) in view Daly et al. (US 5,987,169 A).

Regarding **claim 17**, while Weston discloses the method of claim 11, Weston does not teach that the method further comprises a color transformation device operably connected to and between the image input device and the edge detector, wherein the color transformation device converts the color image from an RGB representation to a luminance-chrominance representation.

Daly et al. teaches a luminance/chrominance apparatus ("This disclosure deals with using the luminance signal as a control for the processing of chrominance signals in order to prevent chromatic blur", col. 2, l. 63) comprising a color transformation device, wherein the color transformation converts the color image from a RGB representation to a luminance-chrominance representation (fig. 5 in combination with "Signal 32 is transformed, block 40, by conventional transformation algorithm T into a luminance image signal component (L) 42 and a pair of chrominance image signal components 44,46 (C1, C2).", col. 4, l. 40).

It would have been obvious at the time the invention was made to one of ordinary skill in the art for the method of Weston to disclose a color transformation device operably connected to and between the image input device and the edge detector to convert the color image from an RGB

representation to a luminance-chrominance representation as taught by Daly et al., to represent the color image by a standard digital image format.

13. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Weston (US 5,434,627 A) in combination with Lee et al. (US 5,012,333 A).

Regarding **claim 18**, while Weston discloses the method of claim 11, Weston does not teach the output device as a printer.

Lee et al. teaches a chrominance/luminance apparatus ("A basic system of an interactive image processor...", col. 5, l. 15) wherein the output device is a printer (fig. 3 in combination with "The output image signals are then directed to the printer 20 for printing.", col. 6, l. 1).

It would have been obvious at the time the invention was made to one of ordinary skill in the art for the method of Weston to use a printer as an output device as taught by Lee et al. to view an image from the Weston method on paper.

14. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Weston (US 5,434,627 A) in combination with Berstis (US 6,518,948 B1).

Regarding **claim 20**, while Weston discloses the method of claim 11, Weston does not teach the output device as electronic paper.

Bertstis teaches a multichromal twisting ball display ("It is an object of the present invention to provide an electrical and magnetic, twisting ball display device made up of spheroidal, multichromal balls.", col. 1, l. 65) that is applicable to electronic paper ("Another object of the present invention is to provide electronic paper with individually addressable electret and magnetic balls. Yet another object of this invention is to provide paper-like digitally addressed media that has various applications including, without limitation, a colored display, a sheet of electronic paper, an overlay

transparency, or an architectural screen.", col. 2, l. 16.) and cites using chroma and luma input ("The above-described embodiment of FIG. 6 is not meant to limit the present invention. A given spheroidal ball surface portion may be black; white; clear (i.e., essentially transparent and without chroma); a transparent color (e.g., transparent red, blue, or green, as for certain additive color applications; transparent cyan, magenta, or yellow, as for certain subtractive color applications); an opaque color of any hue, saturation and luminance; any shade of gray, whether opaque or translucent; and so forth.", col. 6, l. 5.)

It would have been obvious at the time the invention was made to one of ordinary skill in the art for the method of Weston to use a multichromal twisting ball display applicable to electronic paper as an output device to view an image from the Weston method on electronic paper as taught by Bertstis.

15. **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over Weston (US 5,434,627 A) in combination with Yanaka (US 6,115,138 A).

Regarding **claim 21**, while Weston discloses the method of claim 11, Weston does not teach the output device as a facsimile machine.

Yanaka teaches a chrominance/luminance apparatus ("...it is the object of the present invention to provide an image forming apparatus for print and forming an image on a printing medium...", col. 2, l. 8.) wherein the output device is a facsimile machine ("Furthermore, the ink jet recording apparatus of the present invention can be employed not only as an image output terminal of an information processing device such as a computer, but also as an output device of a copying machine including a reader, and as an output device of a facsimile apparatus having a transmission and receiving function.", col. 23, l. 34.).

It would have been obvious at the time the invention was made to one of ordinary skill in the art for the method of Weston to use a facsimile machine as an output device as taught by Yanaka to allow "a transmission and receiving function", col. 23, l. 38.

16. **Claims 24-27** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamilton, Jr. et al. (US 6,259,822 B1) in view of Weston (US 5,434,627 A).

Regarding **claim 24**, while Hamilton, Jr. et al. discloses a method for enhancing edges of objects in an image, wherein the color image includes a plurality of pixels ("This object is achieved by a method of edge enhancing a digital image having pixels which reduces the visibility of false edge contours, comprising the steps of:...", col. 1, l. 66), comprising:

modifying a luminance component of a subset of the plurality of pixels ("FIG. 1D is a graph depicting the application of the positive and negative boosts of FIG. 1C to the profile shown in FIG. 1A;", col. 2, l. 42. FIG. 1D depicts a unsharp mask that adjusts the color of edge pixels (subset of the plurality of pixels). It is well known to one of ordinary skill in the art that if the color component of the image has been changed, the luminance component has also changed.);

wherein the subset of plurality of pixels are proximate to an edge between one object and another ("Shown in FIG. 1A is a one-dimensional edge profile, which is a graph of image pixel code values plotted as a function of their position on a l. running perpendicularly across an edge feature in a digital image.", col. 1, l. 31);

and wherein pixels not proximate to the edge are not modified ("The difference curve of FIG. 1C is added to the original curve in FIG. 1A and this final curve, shown in FIG. 1D, depicts the profile of the sharpened edge.", col. 1, l. 41. As shown in fig. 1D, the pixels not proximate to the edge are not adjusted.); and

generating an output image based upon the modified luminance component (The act of "enhancing" a digital image from the reference given above constitutes generating an output image from the unsharp mask as disclosed by Hamilton, Jr. et al.), Hamilton, Jr. et al. does not teach adjusting a luminance component of a subset of the plurality of pixels based upon the chrominance information of those same pixels.

Weston discloses a method ("The invention aims to reduce or eliminate this residual cross talk between luminance and chrominance signals.", col. 1, l. 33.), that teaches modifying a luminance component of a subset of the plurality of pixels based upon the chrominance information of those same pixels (refer to the references cited in claim 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of Hamilton, Jr. to adjust a luminance component of a subset of the plurality of pixels based upon the chrominance information of those same pixels as taught by Weston AND for those signals of Weston to be pixels "...to reduce or eliminate this residual cross talk between luminance and chrominance signals.", Weston, col. 1, l. 33.

Regarding **claim 25**, while Hamilton, Jr. et al. a method for improving an image composed of a plurality of pixels ("This object is achieved by a method of edge enhancing a digital image having pixels which reduces the visibility of false edge contours, comprising the steps of:...", col. 1, l. 66), comprising:

selecting a subset of the plurality of pixels based upon at least one predetermined criterion derived from a local spatial neighborhood of the plurality of pixels (As depicted in fig. 1a through fig. 1d, the subset of the plurality of pixels is based upon both their spatial position of each other, as well as their difference in code value magnitude within their spatial position.);

modifying a luminance component of a subset of the plurality of pixels ("FIG. 1D is a graph depicting the application of the positive and negative boosts of FIG. 1C to the profile shown in FIG. 1A;", col. 2, l. 42. FIG. 1D depicts a unsharp mask that adjusts the color of edge pixels (subset of the plurality of pixels). It is well known to one of ordinary skill in the art that if the color component of the image has been changed, the luminance component has also changed.); and

generating an output image based upon the modified luminance component (The act of "enhancing" a digital image from the reference given above constitutes generating an output image from the unsharp mask as disclosed by Hamilton, Jr. et al.), Hamilton, Jr. et al. does not teach modifying a luminance component of a subset of the plurality of pixels based upon the chrominance information of those same pixels.

Weston discloses adjusting a luminance component of a subset of the plurality of pixels based upon the chrominance information of those same pixels (refer to the references cited in claim 1) "...to reduce or eliminate this residual cross talk between luminance and chrominance signals.", col. 1, l. 33.

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of Hamilton, Jr. to adjust a luminance component of a subset of the plurality of pixels based upon the chrominance information of those same pixels as taught by Weston AND for those signals of Weston to be pixels "...to reduce or eliminate this residual cross talk between luminance and chrominance signals.", Weston, col. 1, l. 33.

Regarding **claim 26**, Hamilton, Jr. et al. discloses wherein the at least one predetermined criterion includes only selecting pixels in close proximity to an edge (Refer to references cited in claim 25. The edge pixels selected to be unsharp masking as the output shown in fig. 1d discloses are in "close proximity" to the edge.).

Regarding **claim 27**, while Hamilton, Jr. et al. discloses a method for improving transformation of an image composed of a plurality of pixels ("This object is achieved by a method of edge enhancing a digital image having pixels which reduces the visibility of false edge contours, comprising the steps of:...", col. 1, l. 66), comprising:

determining which of the plurality of pixels are in close proximity to an edge (As depicted in fig. 1a through fig. 1d, the subset of the plurality of pixels is based upon both their spatial position of each other, as well as their difference in code value magnitude within their spatial position. The unsharp mask of fig. 1c applied to this local neighborhood of pixels will determine which are in close proximity to an edge when those specific pixels are affected by the unsharp mask.);

modifying a luminance component of a subset of the plurality of pixels ("FIG. 1D is a graph depicting the application of the positive and negative boosts of FIG. 1C to the profile shown in FIG. 1A;", col. 2, l. 42. fig. 1d depicts a unsharp mask that adjusts the color of edge pixels (subset of the plurality of pixels). It is well known to one of ordinary skill in the art that if the color component of the image has been changed, the luminance component has also changed.); and

generating an output image based upon the modified luminance component (The act of "enhancing" a digital image from the reference given above constitutes generating an output image from the unsharp mask as disclosed by Hamilton, Jr. et al.), Hamilton, Jr. et al. does not teach modifying a luminance component of a subset of the plurality of pixels based upon the chrominance information of those same pixels.

Weston discloses a method ("The invention aims to reduce or eliminate this residual cross talk between luminance and chrominance signals.", col. 1, l. 33.), that teaches adjusting a luminance

component of a subset of the plurality of pixels based upon the chrominance information of those same pixels (refer to the references cited in claim 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of Hamilton, Jr. to adjust a luminance component of a subset of the plurality of signals based upon the chrominance information of those same signals as taught by Weston AND for those signals of Weston to be pixels "...to reduce or eliminate this residual cross talk between luminance and chrominance signals.", Weston, col. 1, l. 33.

Response to Arguments

17. Applicant's arguments filed on 11/21/2007 with respect to independent **claims 1, 10-11, 22** and **24-28** have been respectfully and fully considered, they are not found persuasive.

Summary of Remarks regarding **claims 1, 11,** and **22:**

18. Applicant argues the Examiner should withdraw the rejection to claims 1, 11, and 22 as the Examiner has not established that any of these claims are anticipated by Weston under 35 USC §102(b). The Examiner has not shown that Weston discloses modifying a luminance component of a color image based upon at least one high pass filtered chrominance component or a feedback unit for performing that step. The Examiner asserts that Weston shows a luminance component being adjusted at Adder 152. However, Weston appears to only disclose combining filtered chrominance signals with a filtered luminance signal, thus creating a standard color signal. Combining the signals combines the information contained in both signals and provides a signal containing luminance and chrominance information for each pixel of an image. If the luminance channel were to be split off again, nothing in Weston suggests the chrominance signal would have affected the luminance information in any way. In claims 1, 11, and 22, Applicants claim modifying the luminance signal itself. In the

description, a weighted, high-pass filtered chrominance signal is actually added to the luminance signal itself. A monochrome image is then generated and monochrome images are created generally using only the modified luminance signal. The luminance signal is modified by the chrominance signal but the modified signal does not include additional chrominance information separate from that embodied in the luminance signal. (Applicant's Resp. 15, November 21, 2007.)

Examiner's Response regarding **claims 1, 11,** and **22:**

Applicant's arguments with respect to claims 1, 11, and 22 have been considered but are moot in view of the new ground of rejection of Weston in view of Herrmann. As described above, Weston discloses a high pass filtering (fig. 7a, element 154) at least one chrominance component ("C" in fig. 7a) of a color image (It is well known to one of ordinary skill in the art that chrominance is a signal used in many video systems to carry the color information of the picture separately from the accompanying luminance signal, and thus fig. 7(a) discloses a color image input. It must be noted that a grayscale image may also be considered a color image, in that the shades of gray are distinct colors.) to compute at least one high pass filtered chrominance component; modifying (fig. 7a, elements 146, 152) a luminance component ("Y" in fig. 7a) of the color image based upon the at least one high pass filtered chrominance component; and generating an output image (fig. 7b, element Y_O)

19. **Summary of Remarks** regarding **claim 10:**

Applicant argues that the Applicants have amended claim 1 to add sufficient detail such that Kamada clearly does not anticipate it. Specifically, for example, the Examiner has not shown that Kamada discloses any grayscale images with enhanced edges. (Applicant's Resp. 16.)

Examiner's Response regarding **claim 10:**

However, Applicant's arguments with respect to claim 10 have been considered but are moot in view of the new ground of rejection.

Patentability of a product-by-process claim is based on the product itself and does not depend on its method of production. That is, if the product in the product-by-process claim is the same as or obvious from a prior art product, the claim is unpatentable even though the prior art product was made by a different process.

20. Summary of Remarks regarding **claim 28:**

Applicant argues the Examiner should withdraw the rejection to claim 28 as the Examiner has not shown that Hamilton shows all the limitations of claim 28. Specifically, the Examiner has not shown lightening a first object and darkening a second object in a grayscale image based upon the difference in colors between the first and second object prior to conversion to grayscale ("the original color edge strength"). The conversion in Hamilton appears to be a standard color-to-grayscale conversion and the enhancements appear to be performed after conversion. Therefore, the Examiner has not shown that Hamilton anticipates claim 28. (Applicant's Resp. 16.)

Examiner's Response regarding **claim 28:**

However, the Examiner has provided more detail to the anticipation by Hamilton as shown in sec. 11.

21. Summary of Remarks regarding **claims 24-27:**

Applicant argues the Examiner should withdraw the rejection to claims 24-27 as the Examiner has not shown that the combination of Hamilton and Weston shows all the limitations of claims 24-27.

(i) Regarding claim 24, the Examiner has not shown that either reference discloses modifying pixels proximate to an edge between one object and another based upon the chromatic information of those same pixels. (Applicant's Resp. 18.)

(ii) Regarding claim 25, the Examiner has not shown that either reference discloses modifying the luminance components of each of a subset of the plurality of pixels based upon the chrominance information of the same plurality of pixels, where the subset was chosen based upon a predetermined criterion derived from a local spatial neighborhood of the plurality of pixels. (Applicant's Resp. 18-19.)

(iii) Regarding claim 27, the Examiner has not shown that either reference discloses modifying the luminance components of each of a subset of a plurality of pixels based upon chrominance information from the same plurality of pixels. Hamilton appears to show simple post-conversion enhancement and the Examiner has not identified where Weston discloses such a limitation. (Applicant's Resp. 19-20.)

Hamilton appears to show simple post-conversion enhancement and the Examiner has not identified where Weston discloses such a limitation. The Examiner asserts that if a color component has been changed, the luminance component will change as well. However, the Examiner has not shown where either reference discloses using chrominance components to adjust the luminance component of a pixel. Adjusting "color" is typically done in a non-L'a'b* space where luminance and chrominance components are mixed. When a color is adjusted it can change both luminance and chrominance components simultaneously. The Examiner has not shown modifying the luminance components of a subset of pixels proximate to an edge based upon the chrominance information of

those pixels. Therefore the Examiner has not shown that claims 24-27 are obvious over the combination of Hamilton and Weston. (Applicant's Resp. 17-20.)

Summary of Remarks regarding **claims 24-27:**

However, Weston as shown above in sec. 13 does in fact modify its luminance component based upon the chrominance component as shown in fig. 7a. It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of Hamilton, Jr. to adjust a luminance component of a subset of the plurality of pixels based upon the chrominance information of those same pixels as taught by Weston "...to reduce or eliminate this residual cross talk between luminance and chrominance signals.", col. 1, l. 33.

The pixel mapping as required in claims 24-27 is anticipated by Hamilton, leaving the only difference between Hamilton and Weston is that of modifying the luminance components based upon the chrominance information of the same components, as then taught by Weston. It would have been obvious to one of ordinary skill in the art at the time the invention was made for the method of Hamilton, Jr. to adjust a luminance component of a subset of the plurality of signals based upon the chrominance information of those same signals as taught by Weston AND for those signals of Weston to be pixels "...to reduce or eliminate this residual cross talk between luminance and chrominance signals.", Weston, col. 1, l. 33.

Allowable Subject Matter

22. **Claims 5-7** and **14-16** allowed.

Conclusion

23. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

24. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David P. Rashid whose telephone number is (571) 270-1578. The examiner can normally be reached Monday - Friday 8:30 - 17:00 ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on (571) 272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system,

contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Rashid/
Examiner, Art Unit 2624

David P Rashid
Examiner
Art Unit 2624

VIKKRAM BALI
PRIMARY EXAMINER